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Determinants of foreign direct investment in Macedonia. Evidence from time series 1994 – 2008

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Foreign Direct Investment has been considered as one of the main factors underlying the relative growth rates experienced by the Macedonian Economy. The raising trend of FDI inflow made possible the deep liberalization and transformation of an economy, thus increasing the degree of openness and integration of Macedonian economy into the world markets. In addition, the Macedonian attitude toward European Union (EU) membership has involved a new boost in FDI that would reflect the favorable prospects for the country's economic future faced with the challenges of the Single European Market. Despite the crucial role played by FDI in the Macedonian economy, the available empirical evidence is rather scant, being in general of a descriptive nature. The aim of this paper is to provide some more robust evidence on the tested hypothesis related allocation over time of gross aggregate FDI inflows in the Macedonian economy. For this purpose, using quarterly data for the period 1994 – 2008 we employed cointegration analysis. This paper applies dynamic econometric methodology empirically to investigate the determinants affecting foreign direct investment (FDI) inflow in Macedonia.

Keywords: Foreign Direct Investment, Macedonia, Error Correction Model, Cointegration Analysis.

JEL codes: F23, F41, C3

1 Introduction

Through FDI developing countries can gain potential benefits by attracting international capital flows. This is based on the grounds that foreign capital through expanding domestic savings, usually at low levels, enables countries to increase their rate of capital accumulation (Skuflic and Botric 2006). In turn this lead to speediness of the development processes of the country through increasing long term growth prospects and wealth of the population. Taking into account the importance of FDI in the future economic development of transition economies, the main objective of this study is to examine some of the determinants of FDI inflow in Macedonia

The study is organized as follow. The first part of the paper examines the general trends of FDI in Macedonia, based on geographical distribution. The second part follows with a theoretical approach, related FDI determinants. Based on this, we tried to find out the main location determinants of FDI inflow in Macedonia, using co integration analysis, thus giving contribution to empirical evidence of FDI determinants. Therefore using a

quarterly time series data, for the period 1994 – 2008, the paper research the relationship between FDI, government expenditures, trade openness, employment, exchange rate and average monthly wages. Our findings suggest that all the variables appear to be robust under Error Correction Mechanism specification, thus enabling us to analyze the long run dynamics of FDI inflow, using cointegration analysis.

2 FDI statistics in the Republic of Macedonia

FDI inflow in Macedonia has been extremely low during the past decade, mainly due to complicated procedures for investment. In the observed period from 1997 to 2008 the FDI- s in Macedonia went up by 10.3 times.

Table 1.
Flows of Foreign Direct Investment. Republic of Macedonia: Foreign Direct Investment, - Net Flows, 1997 – 2008 (in millions of USD)

Years	1997	1998	1999	2000	2001	2002
FDI in Macedonia	58,1	150,5	88,4	215,1	447,1	105,6

Years	2003	2004	2005	2006	2007	2008
FDI in Macedonia	117,8	323,0	97,0	424,2	699,1	598,5

Source: National Bank of Republic of Macedonia

In 2001 the country reached it's highest level of FDI inflow, recording US dollar 447, 1 million. In 2002 the FDI inflow in Macedonia picked down to US dollar 105, 6 million. The trend enjoyed steady rise during the year of 2004. The FDI inflow in the year of 2005 were US dollar 97.07 million and then rose dramatically in the year of 2006, where US dollar 424,2 million dollars was registered in that year. In 2007 the FDI inflow, increased to 699,1 and the year latter enjoyed a sharp decrease to US dollar 598,5 million.

However in order to analyse the relevance of FDI in Macedonia, we have to focus on the relative indicator of FDI inward stock as a percentage of gross domestic product (GDP). This enables us to know the potential effect of FDI on the overall activity of Macedonian economy. The observed period is from 1997 to 2007.

Table 2.
Inward FDI (net inflow) as a share of GDP in Macedonia

Years	Inward FDI (net)in US dollars (millions)	GDP cumulative in US dollar (millions)*	Inward FDI (net inflow) as share of GDP
1997	58,1	2955	1,01
1998	150,5	3157	4,04
1999	88,4	3340	0,9
2000	215,1	3588	4,82
2001	447,1	3706	11,89
2002	105,6	3872	2,00
2003	117,8	4119	2,3
2004	323,0	4298	3,62
2005	97,0	4534	2,14
2006	699,1	4892	14,29
2007	598,5	5407	11,06

*Source: National Bank of Republic of Macedonia, Statistics Department International Investment Position Division, * Republic of Macedonia – State Statistical Office.*

The low level of FDI is also reflected through their relative low share in the Gross Domestic Product (GDP) of the Republic of Macedonia. Thus, in 1995 to 2000 the average annual share of FDI to GDP equal 1.925%. In 2001 the FDI inflow as a percentage of GDP rose significantly to 11.89 %, which rise was attributed to the privatization of state owned companies. In 2002 the FDI inflow as a percentage of GDP felt dramatically to 2% from 11.89% from the previous year and then the trend enjoyed a steady rise up to 2004. In 2005 the share of FDI to GDP decreased slightly to 2.14% from 3.62% in previous year. In the years of 2006 and 2007, the highest share of FDI as a percentage of GDP was registered, reaching the respective amounts of 14,09 and 11,06 thus reflecting the improvement of macroeconomic conditions of Macedonia.

2.1 FDI in the Republic of Macedonia, by country of origin

Analyzing by country, the largest foreign Investors in the Republic of Macedonia during the observed period (2000 – 2007) were Austria, Hungary, Greece and Netherlands. Observing by year, in 2000, most FDI originated from Greece (57.8%) and United Kingdom (14.1%). The explanation behind this is that, in 2000, the largest bank in Macedonia - Stopanska Banka a.d. Skopje – was sold to National Bank of Greece (60%), IFC (15%) and IBRD (15%). The same year, was sold the largest insurance company, ADOR a.d. Skopje, to QBE International (55%) from UK. In 2001 the leading investment country in Macedonia was Hungary with 72.5% of total investment

share, leaving behind Greece with 15.2% proportionate share of total investment. The share of FDI from Hungary was due to the privatization of Macedonian telecommunication. The privatization of this well known state owned company with monopoly power in the country was made through FDIs from the Hungarian MATAV in amount of 323 million USD (which represents 52.9% of the total capital of MT, out of which 1,4% is the share of IFC). In 2002 again Greece was recorded as leader investment country in Macedonia. Its investment share in this year picked up to 55.3% from 15.2% in previous year. Observing the year of 2003, it can be seen that the highest investment share came from Netherlands with 31.8% share of total investment, followed by Switzerland and Bulgaria with 13.5% and 11%, respectively. In 2004 Netherlands investment share, went up to 40.6%, once again representing itself as a leader investment country in Macedonia. In 2005 the investment share in Macedonia, was divided between several countries. In the highest part of proportionate share took place Italy (14.4%), Russia (13.6), Switzerland (13.5) and Austria (11.8). In 2006, Austria was recorded as the highest investment country in Macedonia, with proportionate share of 77.6% of total investment. In 2007, the highest proportionate share of total investment in Macedonia was divided between countries, Hungary (14.20), Slovenia (12.24), Serbia (10.80), Greece (8.75) and United Kingdom (7.96).

3 Theory overview of FDI

The earliest FDI theory originated from the industrial organization produced by S. H. Hymer (Hymer, S 1970). He argued that FDI flows are not distributed randomly among industries, but rather by competitive conditions (Hymer, S 1970). According to industrial organization theory, the enterprise determinant for involvement in industries located in other countries is firms ability to generate or acquire income generating assets not available to indigenous firms, sufficient to overcome the advantages which the later firms have in that country. Therefore, the net advantage of the foreign firm depends upon the nature of the product supplied in the industry.

International product life cycle theory of FDI flows introduced by Raymond Vernon, explains FDI flows based on the hypothesis of comparative advantage of factor endowments, that is the theory which stressed the information, uncertainty and scale economies (Oxelheim et al 2001). Factor endowment theory suggests that differences in endowments and initial conditions among countries explain the geographical pattern of inward FDI (Kinoshita and Campos, 2004), thus, the phenomena of developed countries investing in developing countries might take place.

Table 3.
FDI in the Republic of Macedonia by country of origin, as a % of Euro Millions

2000	2001	2002	2003	2004	2005	2006	2007
Greece (57.8)	Hungary (72,5)	Greece (55,3)	Netherlands (27, 8)	Netherlands (40,6)	Italy (14.4)	Austria (77.6)	Hungary (14.30)
United Kingdom (14,1)	Greece (15,2)	Cyprus (9,2)	Switzerland (13,5)	Greece (18,5)	Russia (13.6)		Slovenia (12.24)
Slovenia (6,5)		Bulgaria (6,1)	Bulgaria (11)	Netherland Antiles (6,3)	Switzerland (13.5)		Serbia (10.80)
Germany (6,3)		USA (5,2)	EBRD (8,55)	Grenadines (5,2)	Austria (11.8)		Greece (8.75)
		Slovenia (5)	Greece (6,9)	Switzerland (5)	Bulgaria (8.2)		United Kingrom (7.86)
		Poland (5)	Slovenia (6,1)	Italy (4,6)	Grenadines (9.7)		France (5,63)
				Germany (4,0)	Slovenia (5.8)		Netherland (5.31)
				Croatia (3,1)	Greece (5.1)		Bulgaria (5)
				Bulgaria (3,0)			Croatia (4.68)
	Other States (12,3)	Other States (14,8)	Other states (16,1)	Other States (9.7)	Other States (13.1)	Other States (23,1)	Other States (25.38)
178,524,328	445,134,152	81,676,742	99,345,305.86	161,118,842.3	112,545,109.	359,582,344	699,091,235

Source: Calculations made by the author using data from National Bank of Republic of Macedonia, Statistics Department.

The substitute theory of FDI for trade by Robert Mundell (1968), states that international trade is driven by differences in factor endowments and factor price of homogenous products (Oxelheim et al 2001). Mundell argued that when high trade impediments deter commodity movements, the relationship between commodity and factor movements are substituted. (Mundell 1968). This relationship implies that the increasing of FDI will decrease the exports from home country to a host country.

K. Kojima introduced the complements theory in late 1970s as a major change to the substitute model (Oxelheim et al 2001). Kojima views FDI as extension of the neoclassical theory of trade to embrace cross border of intermediate products. (Dunning 1988). Kojima's macroeconomic approach predict that export oriented FDI occurs when the source country invest in those industries in which the host country has a comparative advantage (Oxelheim et al 2001). Thus, Kojima derived the results that export oriented FDI is characterized as being welfare improving and trade creating since it can promote both host countries and source countries exports'. Thus complements

effect are helpful to increase the international trade between home country and host country.

John Dunning (1981) proposed a more comprehensive theoretical framework of FDI flows, which even today hasn't lost it actuality and relevance. The OLI paradigm theory, developed by Dunning represents a combination of the three partial theories of FDI, which focused on the ownership advantages, the location advantages and the internalization advantages (Dunning and McQueen, 1981)

4 Data and empirical methodology

The econometric methodology that is used in this paper is based on the so-called "cointegration analysis", that has provided further support for the error correction model (ECM thereafter), and has greatly enhanced the approach to non stationary time series. The sample period for time series model ranges from 1994 to 2008. The data values are restricted to quarterly aggregated data, and all values are continuous. The data sources come from International Financial Statistics.

4.1 Definition of variables

The scope of the model, although being formulated, at a relatively aggregated level, is to consider the diverse range of influences on decision making in investing abroad. By explaining the expected signs of the variables, we briefly discuss some of the variables introduced in the model.

In line with the approach used in the FDI literature, the dependent variable used in this study is the Foreign Direct Investment Inflows. The choice of independent variables is constrained by data availability, as is mostly the case with time-series data in developing countries. This study uses the following variables that are commonly used in studies of FDI.

Openness: The openness of host country's economy may encourage FDI inflows, and relatively closed economy may discourage FDI inflow. As a result, the variable of openness, measured by exports and imports over GDP, is expected to have the positive effects on FDI inflows.

Government Expenditure. The role of policy measure is captured by Gexp which denotes government expenditures as a share of GDP. We expect a positive relationship between these two variables, due to the fact that FDI – s are more likely to go to countries that do government expenditures for various purposes of national economy, like investing in infrastructure, fighting unemployment or reduce taxes.

Employment level is expected to indicate the plentiful degree of labor forces. Thus, the higher employment means that the plentiful workers and staffs with skill and knowledge may satisfy the demand of foreign enterprises, which make benefits from foreign enterprises to promote labor productivity through the process of learning by doing. Thus, employment variable is expected to have a positive effect on FDI inflows.

Exchange Rate The theoretical analysis about the relation of FDI with exchange rates shows explicitly that relative FDI inflows are a function of relative real exchange rates, and that exchange rates affect foreign direct investment, and the impact is significant, especially in short run (Yuqing Xing, 2006). The exchange rate used here is per Dollar per national currency. The coefficient for exchange rate (EX) is ambiguous in many studies. As it could be positive if foreign investors are considering it as lower cost of capital and negative if they are expecting a higher return on their investments

Labor cost, measured by average monthly wages. (LC) – Annual average monthly wages is used to measure the level of labor costs of host country. The lower monthly wage encourages FDI inflows because of the differences of real wage rate between host country and home country. The expected impacts of wages variable on FDI inflows should be negative.

4.2 Econometric assessment: model specification

In this part we examine the empirical relevance of several hypothesis put forward in the literature of FDI determinants, in order to explain the evolution of the aggregate FDI inflows received by the Macedonian economy during the 1994 – 2008 period. For this purpose, we make use of cointegration techniques, which allow us to obtain robust and reliable estimates of the parameters in the empirical relationship. Following this approach we identify the long run determinants of foreign direct investment (FDI) in Macedonia over the period 1994 – 2008. The main interest in this study is to identify the different variables, reflecting openness degree of Macedonian, real sector developments and monetary sector developments that determine FDI attraction in Macedonia. In the study, we used the Error Correction Mechanism to identify the variables explaining FDI determinants in Macedonia.

The general form of the model estimated has the following form

$$LNFDI = f\left(LNOPNX, LNGEXP, LNEMP, LNER, LNAMW\right); \quad (1)$$

where

1. LNOPN = Openness as a percentage of GDP, in logarithm
2. LNGEXP = General Government Expenditure as a share of GDP, in logarithm
3. LNEMP = Employment, in logarithm
4. LNER = Exchange Rate. Denar per US Dollar, in logarithm
5. LNAMW = Average Monthly Wages, in logarithm

Since the study covers the period 1994 – 2008, using quarterly data and the variables discussed in the previous section, constitute time series information, the appropriate modeling strategy is using time series analysis. The specified model can be given by

$$LNFDI_t = a_0 + B_1 LNOPN_t + B_2 LNGEXP_t + B_3 LNEMP_t + B_4 LNER_t + B_5 LNAMW_t + u_t \quad (2)$$

In our regression analysis of FDI determinants, first we check for spurious regression. Spurious regressions occur when results from the model show promising diagnostic test statistics even where the regression analysis has no meaning (Gujarati, 2003). Because

of this problem, the first step in any time series analysis is to test for the stationary of variables.

4.2.1 Unit root test - augmented Dickey-Fuller test – test for stationarity

It is essential to test for stationarity to confirm that the process by which data could have been generated is a stochastic one. This is done using Augmented Dickey–Fuller Test, as it has been used by Rubio and Rivero (1994), on their econometric analysis of foreign direct investment in Spain.

Therefore, in conducting the Dickey-Fuller test on Equation (2), it is assumed that the error term u_t is uncorrelated. In the cases when u_t are correlated, Dickey and Fuller have developed a test, known as the augmented Dickey-Fuller (ADF) test. The starting point in unit root test is:

$$Y_t = aY_{t-1} + u_t \;; -1 \le a \le 1 \tag{3}$$

The null hypothesis in the Augmented Dickey-Fuller test is that the underlying process which generated the time series in non-stationary. This will be tested against the alternative hypothesis that the time-series information of interest is stationary. If the null hypothesis is rejected, it means that the series is stationary i.e. it is integrated to order zero. If, on the other hand, the series is non-stationary, it is integrated to a higher order and must be differenced till it becomes stationary. The order of integration of a time series data set shows the number of times the series has to be differenced before it becomes stationary (Gujarati, 2003). When testing for unit root we want to find out whether a in the Equation (3) is equal to 1. If a is smaller then 1, the series is stationary. If, on the other hand, a is greater than 1, than it would be an explosive series.

$$\begin{aligned} Y_t - Y_{t-1} &= (a-1)Y_{t-1} + u_t \\ \Delta Y_t &= \beta Y_{t-1} + u_t \end{aligned} \tag{4}$$

Subtracting Y_{t-1} from both sides we get Equation (4), which is estimated by the Dickey–Fuller and Augmented Dickey–Fuller test. In addition a constant – testing for a random walk with drift, and time trend – testing for a deterministic feature, are incorporated into the Equation (4). Since the null hypothesis in Equation (3) is that a is equal to 1, in Equation (4) it must be that β is equal to zero. Hence, when β is zero, there is unit root, and we have insufficient evidence to reject the null hypothesis of non -stationarity.

In order to test for the stationarity of time series, we have to difference the variables. We start with the plot of logarithmic values of explanatory variables. The plot of logarithmic variables will give the identical results, because the logarithmic is a monotonic transformation.

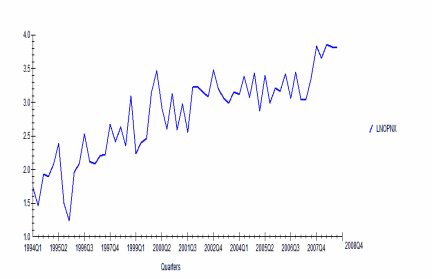

Figure 1. Plot of LNOPNX

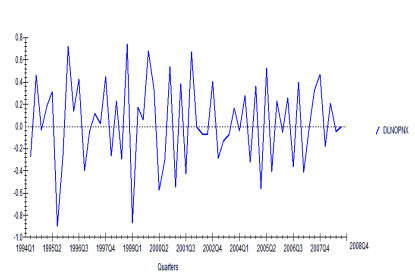

Figure 2. Plot of DLNOPNX

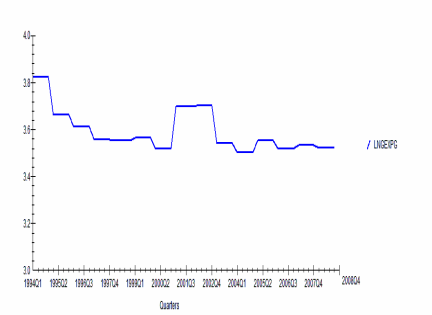

Figure 3. Plot of LNGEXPG

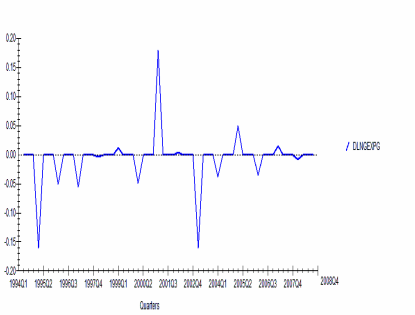

Figure 4. Plot of DLNGEXP

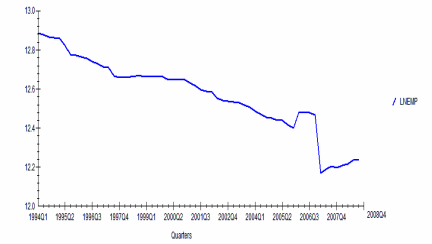

Figure 5. Plot of NNEMP

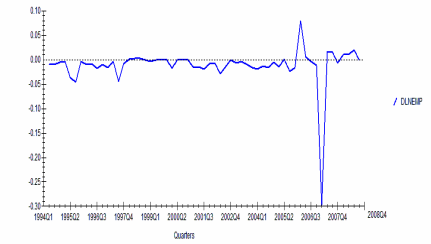

Figure 6. Plot of DLNEMP

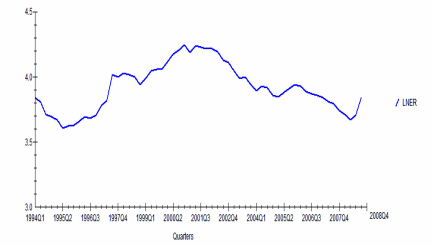

Figure 7. Plot of LNER

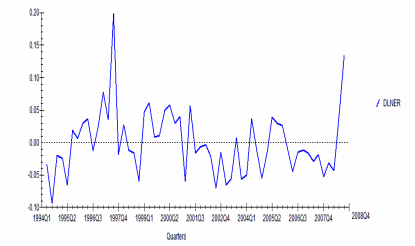

Figure 8. Plot of DLNER

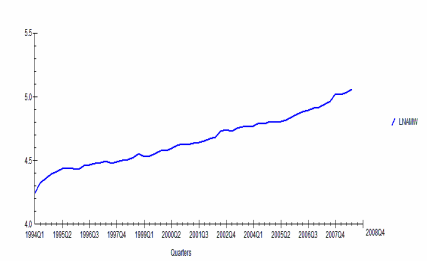

Figure 9. Plot of LNAMW

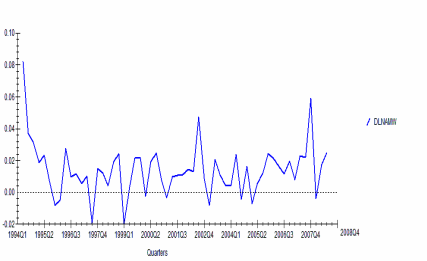

Figure 10: Plot of DLNAMW

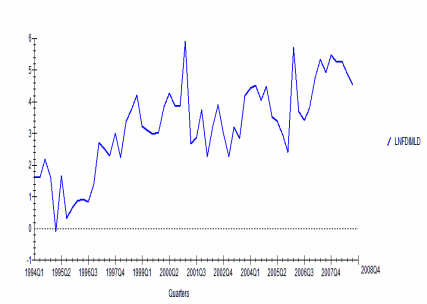

Figure 11: Plot of LNFDIMLD

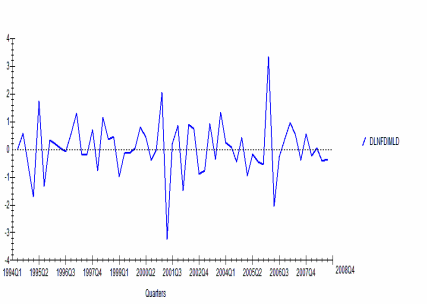

Figure 12: Plot of DLNFDIMLD

The plot of the explanatory variables determining Foreign Direct Investment in Macedonia, is provided in the above figures. The figures are showing that all the explanatory variables of FDI are becoming stationary, on their first difference. This means that he null hypothesis that a given series contain a unit root and is non stationary, was rejected for the first differences of respective explanatory variables of FDI determinants. The results of the Augmented Dickey - Fuller tests are shown in Table 4. The same conclusion is achieved, on Table 4, when comparing the t statistics with their critical values.

Table 4.
The unit root tests results of variables used in the model

	Levels		First Difference			Levels		First Difference	
	ADF(3)		ADF (4)			ADF(2)		ADF(1)	
LNFDIMLD	Without trend	With trend	Without trend	With trend	**LNOPNX**	Without trend	With trend	Without trend	With trend
T statistic	-1.87	-2.67	-4.38	-4.32	T statistic	-1.38	-4.10	-6.88	-6.82
T critical (5% level)	-2.91	-3.49	-2.91	-3.49	T critical (5% level)	-2.91	-3.49	-2.91	-3.49
Akaike Information Criteria (AIC)	-71.58	-70.54	-72.77	-73.72	AIC	-21.91	-15.94	-21.53	-22.47
Ho - non stationary	Accept Ho	Reject Ho	Reject Ho	Reject Ho	Ho - non stationary	Accept Ho	Reject Ho	Reject Ho	Reject Ho
	ADF(1)		ADF(1)			ADF (1)		ADF (3)	
LNGEXPG	Without trend	With trend	Without trend	With trend	**LNEMP**	Without trend	With trend	Without trend	With trend
T statistic	-2.25	-2.41	-5.45	-5.40	T statistic	-0.87	-2.98	-5.21	-5.18
T critical (5% level)	-2.91	-3.49	-2.91	-3.49	T critical (5% level)	-2.91	-3.49	-2.91	-3.49
Akaike Information Criteria (AIC)	104.48	107.92	99.51	98.55	AIC	92.86	95.90	91.48	90.57
Ho - non stationary	Accept Ho	Accept Ho	Reject Ho	Reject Ho	Ho - non stationary	Accept Ho	Accept Ho	Reject Ho	Reject Ho
	ADF(2)		ADF (1)			ADF(1)		ADF (1)	
LNER	Without trend	With trend	Without trend	With trend	**LNAMW**	Without trend	With trend	Without trend	With trend
T statistic	-2.01	-1.89	-3.45	-3.71	T statistic	1.91	-0.83	-5.95	-6.88
T critical (5% level)	-2.91	-3.49	-2.91	-3.49	T critical (5% level)	-2.91	-3.49	-2.91	-3.49
Akaike Information Criteria (AIC)	87.37	86.62	8494	84.91	AIC	153.82	153.47	149.94	152.28
Ho - non stationary	Accept Ho	Accept Ho	Reject Ho	Reject Ho	Ho - non stationary	Accept Ho	Accept Ho	Reject Ho	Reject Ho

The stationary and co integration test we have conducted, suggest that the model (2) should be estimated, using the differenced variables. Hence, here we can only look at a short run relationship among these variables (Gujarati, 2003). The final short run model estimated has the following form.

$$\Delta LNFDIMLD_t = a_0 + B_1\Delta LNOPN_t + B_2\Delta LNGEXP_t + B_3\Delta LNEMP_t + B_4\Delta LNER_{t\ t} + B_5\Delta LNAMW_t + \varepsilon_t \quad (5)$$

Δ - denote the first difference of the variable

After determining the order of integration of the variables, we followed the two-step estimation procedure for dynamic modeling suggested by Engle and Granger. So, in a first step the so-called "cointegrating regression", in which all the variables would be in levels and no dynamics included, would be estimated by ordinary least squares

(OLS), and the residuals from this regression will be tested for the presence of a unit root (Rubio and Rivero, 1994). If the residuals were found to be stationary, the cointegrating regression might be taken as a long-run relationship and we could then proceed to the second step, where an Error Correction Model (ECM), including those lagged residuals as an error-correction term would be postulated in order to consider the short-run dynamics. When we test for the presence of unit root on the residuals obtained, after OLS estimation of the Equation (2), we find that the residuals are stationary.

Table 5.
The Unit Root tests results on Residuals from Equation (2) – Engle Granger Method

The Dickey – Fuller Regression Based on OLS regression of LNFDIMLD on: C LNOPNX LNGEXPG LNEMP LNER LNAMW 51 Observations used for estimation from 1995Q2 to 2008Q3				
	DF		ADF(1)	
Without trend	-6.8400	(-2.9157)	-4.6855	(-2.9157)
With trend	-6.7705	(-3.4935)	-4.363.96	(-3.4935)

95 % critical values in brackets

From Table 5, we see that *t* statistic exceeds the critical value, suggesting no unit root. The residuals are stationary, thus confirming, the presence of the long run relationship between the variables. The series are cointegrated and therefore we proceed with the second step, by analyzing the Error Correction Mechanism, thus enhancing the approach of non stationary time series.

4.2.2 Error correction mechanism

In order to make a formal analysis of cointegration approach, we employ the second step of estimation procedure for dynamic modeling suggested by Engle and Granger (Engle and Granger 1987). Hence, in order to model the long run dynamics, when estimating the final short run model (Equation 5), suggested by Augmented Dickey – Fuller test, we consider the postulation of the lagged residuals as an error correction term, obtained from the OLS estimation of Equation (2). Following this approach we estimate the cointegration regression shown on Equation (7), which confirms the presence of long run relationships between the explanatory variables (Gujarati, 2003)

The error correction model is as follows.

$$\Delta Y = B_0 + B_1 \Delta X_t + B_2 \left(Y_{t-1} - C - X_{t-1}\right) + \varepsilon_t (6)$$

where

$$u_t - 1 = \left(Y_{t-1} - C - X_{t-1}\right) + \varepsilon \quad \text{Error correction mechanism}$$

$$Y_t = DFDIMLD$$

$$X_t = DLNOPNX, DLNGEXPG, DLNEMP, DLNER, DLNAMW$$

First we estimate Error Correction Mechanism from Cointegraiting regression; we lag it, and then run the following regression.

$$\Delta LNFDIMLD_t = a_0 + B_1 \Delta LNOPN_t + B_2 \Delta LNGEXP_t + B_3 \Delta LNEMP_t + B_4 \Delta LNER_t + B_5 \Delta LNAMW_t + B_6 u_{t-1} (7)$$

u_{t-1} - denote the error correction term.

Since the model was estimated in logarithm the estimated coefficients denote elasticity's. Following this procedure, the results of applying the ECM procedure to Equation (7) for total FDI were as follows.

Table 6.

Results from cointegration regression, derived from ECM procedure (Equation 7), including the lagged residuals obtained from OLS estimation of Equation (2)

Ordinary Least Square Estimation			
Dependent Variable is DLNFDIMLD			
57 observations used for estimation from 1994Q3 to 2008Q3			
Explanatory Variables	Coefficient	Standard Error	T – Ratio[Prob]
C	.062795	.040100	1.5660[.124]
DLNOPNX	.26345	.075905	3.4709[.001]
DLNGEXPG	-1.5332	.70151	2.1855[.034]
DLNEMP	-4.1145	.66838	6.1560[.000]
DLNER	1.9818	.64925	3.0524[.004]
DLNAMW	4.5575	2.2126	2.0598[.045]
RES1	.96826	.028034	34.5388[.000]
R - Squared	.96387	R-Bar-Squared	.95953
S.E. of Regression	.20407	F-stat	F(6, 50) 222.292[.000]
Mean of Dep. Variable	.05733	S.D. of Dep Variable	1.0144
RSS	2.0822	Eq Log-likelihood	13.4449
Akaike Info	6.4449	Schwarz Bayesian	-.70578

Diagnostic Tests		
Test Statistics	LM Version	F Version
A. Serial Correlation	CHSQ(4)= 12.7765[.012]	F(4, 46)= 3.3224[.018]
B. Functional Form	CHSQ(1)= .84979[.357]	F(1, 49)= .74158[.393]
C. Normality	CHSQ(2)= 2.7831[.249]	Not applicable
D. Heteroscedasticity	CHSQ(1)= .31901[.572]	F(1, 55)= .30955[.580]

5 Results and policy implications

From Table 6 we see that all the variables determining FDI – s in Macedonia are statistically significant. The intercept is statistically insignificant, while the error correction mechanism that implies long run equilibrium relationship is statistically significant at 1% level. The coefficient of Res (-1) tells us how fast DLNFDIMLD changes to disequilibrium changes in five explanatory variables.

With regard to openness level of economy, measured by exports plus imports over GDP, the results indicate that FDI – s in Macedonia are determined also by significant openness degree of the state. Holding other variables constant, each percentage increase in the openness degree of Macedonian economy, lead to, on average 0.26 percentage increase of cumulative FDI. This result is particularly important for Macedonian economy, once considering the effort of Macedonian economy for trade liberalization and its ambitions for becoming part of EU and EMU countries.

As concern to Government expenditures as a share of GDP, as a policy measure determinant of FDI, the result exhibit significant negative relationship between these two variables. In the model, ceterus paribus, one percentage increase of Macedonian government expenditure, will lead to, on average, 1.53 percent decrease of cumulative FDI, meaning that public investments promoted through government expenditures are not contributing to foreign investments. The size of government expenditure is found to be critical determining factor on capital accumulation. The explanation that may lay behind the scope of this interpretation can be addressed to the biasness of economic climate in Macedonia, thus confirming the regional predispositions towards corrupt practices, concerning government expenditures being done for FDI attraction motives.

Employment is found to be significant factor determining FDI, laying on a negative relationship with it. The results indicate that, one percent increase in employment level; will lead to, an average 4.11 percent decrease on FDI – s. This contrary result may be attributed to low skilled workers and staff with insufficient knowledge for applying the appropriate performance, during their job, thus unsatisfying the demand of foreign enterprises to invest in the country.

Average monthly wages are found to have positive robust influence on FDI – s. In the model, the coefficient of wage is positive and statistically significant indicating that, holding other variables constant, one percent increase on average monthly wages, will lead to, on average 4.55 percent increase on FDI – s. The FDI – Wage arbitrage relationship in this case actually does come out moderately positive and explicitly enough to lead us to the sensible interpretation, although contrary to theoretical expectation, that FDI may increase, due to the improvement of labor market conditions and hence, generation of positive spillovers that may lead to higher productivity growth, thus, boosting competition and lowering domestic market inefficiencies.

The macroeconomic variable denoted by Exchange Rate is shown to be statistically significant, and have the appropriate signs, with respect to FDI. This confirms the evidence of positive relationships of expectations of local currency appreciations and FDI – s. This implies that when denar appreciates, FDI increases as investors see it as a good sign for the economy. In the model, holding other variables constant, 1 percent

increase in the value of denar exchange rate relative to US dollar will imply, on average 1.91 percent increase on FDI.

The results of this paper allow us to draw some policy implications. First of all, government institutions of Macedonia need to work harder for unbiased promotion of the country to foreign investors thus eliminate any possible corrupt practices with regard to government expenditures, being done for the investment promotion programs. Second, the job training programmes, should be developed furthermore by the responsible institutions, such as universities or the regional offices of the ministry for job and social affairs, in order to contribute to the increase of the labor productivity of Macedonian economy thus satisfying the labor demand of multinational firms.

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